

This Page Is Inserted by IFW Operations  
and is not a part of the Official Record

## **BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning documents *will not* correct images,  
please do not report the images to the  
Image Problem Mailbox.**



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>6</sup> :</b> F21K 2/00, 2/06, F41C 3/00, F21P 1/02, B05B 17/08, A23L 1/03, 2/00, A23G 1/00, 9/02, A23K 1/18, D06Q 1/00, A63H 27/10, A61K 7/00, 7/16, 9/127, C09D 11/00, 17/00, A45C 1/00, F42B 4/00, C12N 9/02, 11/02, F42B 3/00, B65D 83/00, A01K 67/027, C05G 3/00, C12N 15/52, B65D 81/32, F41B 9/00, B05B 11/00	<b>A3</b>	<b>(11) International Publication Number:</b> WO 97/29319  <b>(43) International Publication Date:</b> 14 August 1997 (14.08.97)
<b>(21) International Application Number:</b> PCT/US97/01699  <b>(22) International Filing Date:</b> 3 February 1997 (03.02.97)  <b>(30) Priority Data:</b> 597,274                   6 February 1996 (06.02.96)       US 757,046                   25 November 1996 (25.11.96)      US  <b>(71)(72) Applicant and Inventor:</b> BRYAN, Bruce, J. [US/US]; 716 Arden Drive, Beverly Hills, CA 90210 (US).  <b>(74) Agent:</b> SEIDMAN, Stephanie, L.; Brown Martin Haller & McClain, 1660 Union Street, San Diego, CA 92101-2926 (US).		<b>(81) Designated States:</b> AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, US, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.          Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.</i>  <b>(88) Date of publication of the international search report:</b> 11 December 1997 (11.12.97)

**(54) Title:** BIOLUMINESCENT NOVELTY ITEMS**(57) Abstract**

Systems and apparatus for generating bioluminescence, and combinations of these systems and apparatus with inanimate articles of manufacture to produce novelty items are provided. These novelty items, which are articles of manufacture, are designed for entertainment, recreation and amusement, and include toys, paints, slimy play material, textiles, particularly clothing, bubbles in bubble making toys and other toys that produce bubbles, balloons, personal items, such as bath powders, body lotions, gels, powders and creams, toothpastes and other dentifrices, soaps, body paints, and bubble bath, foods, such as gelatins, icings and frostings, beverages such as beer, wine, champagne, soft drinks, and glowing ice, fountains, including liquid "fireworks" and other such jets or sprays or aerosols of compositions that are solutions, mixtures, suspensions, powders, pastes, particles or other suitable formulation. Cartridges for charging and/or recharging the novelty items with bioluminescence generating systems are also provided.

**FOR THE PURPOSES OF INFORMATION ONLY**

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AM	Armenia	GB	United Kingdom	MW	Malawi
AT	Austria	GE	Georgia	MX	Mexico
AU	Australia	GN	Guinea	NE	Niger
BB	Barbados	GR	Greece	NL	Netherlands
BE	Belgium	HU	Hungary	NO	Norway
BF	Burkina Faso	IE	Ireland	NZ	New Zealand
BG	Bulgaria	IT	Italy	PL	Poland
BJ	Benin	JP	Japan	PT	Portugal
BR	Brazil	KE	Kenya	RO	Romania
BY	Belarus	KG	Kyrgyzstan	RU	Russian Federation
CA	Canada	KP	Democratic People's Republic of Korea	SD	Sudan
CF	Central African Republic	KR	Republic of Korea	SE	Sweden
CG	Congo	KZ	Kazakhstan	SG	Singapore
CH	Switzerland	LI	Liechtenstein	SI	Slovenia
CI	Côte d'Ivoire	LK	Sri Lanka	SK	Slovakia
CM	Cameroon	LR	Liberia	SN	Senegal
CN	China	LT	Lithuania	SZ	Swaziland
CS	Czechoslovakia	LU	Luxembourg	TD	Chad
CZ	Czech Republic	LV	Latvia	TG	Togo
DE	Germany	MC	Monaco	TJ	Tajikistan
DK	Denmark	MD	Republic of Moldova	TT	Trinidad and Tobago
EE	Estonia	MG	Madagascar	UA	Ukraine
ES	Spain	ML	Mali	UG	Uganda
FI	Finland	MN	Mongolia	US	United States of America
FR	France	MR	Mauritania	UZ	Uzbekistan
GA	Gabon			VN	Viet Nam

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 97/01699

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 6	F21K2/00	F21K2/06	F41C3/00	F21P1/02	B05B17/08
	A23L1/03	A23L2/00	A23G1/00	A23G9/02	A23K1/18
	D06Q1/00	A63H27/10	A61K7/00	A61K7/16	A61K9/127

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 F21K C12N B65D F41B B05B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
-----------	--	-----------------------

X	WO 94 04918 A (SLATER & AL) 3 March 1994	1-3,5,8,73,77
A	see the whole document	50,51,54,69,87
X	US 5 383 100 A (J.P.KIKOS) 17 January 1995	1,2,5,54,55,77
A	FR 2 292 595 A (JOURDAIN) 25 June 1976	5,6,9

-/--

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

### \* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"Z" document member of the same patent family

Date of the actual completion of the international search

7 October 1997

Date of mailing of the international search report

27. 10. 97

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
NL - 2280 HV Rijswijk  
Tel. (+31-70) 340-2040, Tx. 31 851 epo nl,  
Fax: (+31-70) 340-3016

Authorized officer:

Drouot, M-C

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 97/01699

## A. CLASSIFICATION OF SUBJECT MATTER

IPC 6	C09D11/00	C09D17/00	A45C1/00	F42B4/00	C12N9/02
	C12N11/02	F42B3/00	B65D83/00	A01K67/027	C05G3/00
	C12N15/52	B65D81/32	F41B9/00	B05B11/00	

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE WPI                      Section Ch, Week 9546                      Derwent Publications Ltd., London, GB;                      Class B04, AN 95-354274                      XP002042687                      &amp; JP 07 241 192 A (HARATA K) , 19                      September 1995                      see abstract</p>	12-16,18
X	<p>GB 1 105 927 A (MILES) 13 March 1968                      see page 3, line 85-91                      see page 4, line 72-81                      see claims 1-14; example 9</p>	20-23
X	<p>DE 39 35 974 A (MÜLLER-KLIESER) 2 May 1991                      see the whole document</p>	20-22
	-/--	



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

### \* Special categories of cited documents :

\*A\* document defining the general state of the art which is not considered to be of particular relevance

\*E\* earlier document but published on or after the international filing date

\*L\* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

\*O\* document referring to an oral disclosure, use, exhibition or other means

\*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\*Z\* document member of the same patent family

Date of the actual completion of the international search

7 October 1997

Date of mailing of the international search report

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2  
 NL - 2280 HV Rijswijk  
 Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,  
 Fax: (+31-70) 340-3016

Authorized officer

Drouot, M-C

# INTERNATIONAL SEARCH REPORT

International Application No

PCT/US 97/01699

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>DATABASE INSPEC  INSTITUTE OF ELECTRICAL ENGINEERS,  STEVENAGE, GB  Inspec No. 3715919,  GAUTIER S M ET AL: "Alternate  determination of ATP and NADH with a  single bioluminescence-based fiber-optic  sensor"  XP002042686  see abstract  &amp;  5TH INTERNATIONAL CONFERENCE ON  SOLID-STATE SENSORS AND ACTUATORS AND  EUROSENSORS III, MONTREUX, SWITZERLAND,  25-30 JUNE 1989,  vol. B1, no. 1-6, ISSN 0925-4005, SENSORS  AND ACTUATORS B (CHEMICAL), JAN. 1990,  SWITZERLAND,  pages 580-584.</p>	20-22
A	<p>EP 0 302 819 A (HILTI) 8 February 1989  see the whole document</p>	26,31,34
A	<p>FR 2 674 223 A (DOW CORNING) 25 September  1992  see the whole document</p>	26, 29-31,34
A	<p>US 5 405 056 A (G.B.MILLS) 11 April 1995  see the whole document</p>	26,30,31
A	<p>DATABASE WPI  Section Ch, Week 9501  Derwent Publications Ltd., London, GB;  Class B04, AN 95-006227  XP002042688  &amp; WO 94 26100 A (CNRS CENT NAT RECH SCI) ,  24 November 1994  see abstract</p>	39
A	<p>US 4 534 317 A (M.A.WALSH) 13 August 1985  see the whole document</p>	44,86
A	<p>US 5 405 905 A (L.DARR) 11 April 1995  see the whole document</p>	44
X	<p>US 3 511 612 A (G.W.KENNERLY &amp; AL) 12 May  1970  see the whole document</p>	45-49, 53,58, 59,68,82
2 X	<p>WO 92 04577 A (COLLET) 19 March 1992  see the whole document</p>	45,46, 53,58, 59,68
	-/--	

# INTERNATIONAL SEARCH REPORT

Int. l. Application No

PCT/US 97/01699

## C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 563 726 A (N.F.NEWCOMB & AL) 7 January 1986 see the whole document ---	45,46
A	EP 0 246 174 A (EXTRAITS NOIROT) 19 November 1987 see the whole document ---	6,8,50, 87-89, 92,95
A	US 4 765 510 A (V.N.RENDE) 23 August 1988 see the whole document -----	42, 98-102

# INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 97/01699

## Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

## Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

See further information

1. ☒ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☒ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.



# INTERNATIONAL SEARCH REPORT

international Application No. PCT/US 97 01699

## FURTHER INFORMATION CONTINUED FROM PCT/ISA210

1. Claims : 1-11, 24, 25, 40, 43, 50, 52, 54-47, 69-77, 80, 81, 87-102
2. Claims : 12-19
3. Claims : 20-23
4. Claims : 26-38
5. Claim : 39
6. Claim : 44
7. Claims : 45-46(partially), 53
8. Claims : 45-46(partially), 58, 59
9. Claims : 45-46(partially)68
10. Claims : 45-46(partially), 82, 83
11. Claims : 47-49, 60-64
12. Claims : 78, 79
13. Claims : 86

# INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/US 97/01699

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9404918 A	03-03-94	AT 155885 T AU 4970893 A CA 2143339 A DE 69312498 D EP 0657028 A US 5643728 A	15-08-97 15-03-94 03-03-94 04-09-97 14-06-95 01-07-97
US 5383100 A	17-01-95	NONE	
FR 2292595 A	25-06-76	NONE	
GB 1105927 A		BE 665452 A CH 491385 A DE 1598752 A FR 1448893 A NL 6507633 A SE 336243 B US 3411887 A	15-12-65 31-05-70 16-04-70 21-11-66 16-12-65 28-06-71 19-11-68
DE 3935974 A	02-05-91	NONE	
EP 302819 A	08-02-89	DE 3725291 A AU 621056 B AU 1880388 A CA 1336971 A DE 3873208 A DK 400488 A DK 169779 B JP 1045282 A MX 171723 B US 4871090 A	09-02-89 05-03-92 02-02-89 12-09-95 03-09-92 31-01-89 27-02-95 17-02-89 11-11-93 03-10-89
FR 2674223 A	25-09-92	FR 2673948 A DE 69219661 D DE 69219661 T DE 69221754 D EP 0506241 A EP 0503824 A ES 2101031 T JP 5070692 A	18-09-92 19-06-97 25-09-97 02-10-97 30-09-92 16-09-92 01-07-97 23-03-93

# INTERNATIONAL SEARCH REPORT

Information on patent family members

Int. Application No

PCT/US 97/01699

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
FR 2674223 A		US 5348392 A	20-09-94
		US 5153231 A	06-10-92
US 5405056 A	11-04-95	NONE	
US 4534317 A	13-08-85	NONE	
US 5405905 A	11-04-95	NONE	
US 3511612 A	12-05-70	NL 6802234 A	23-09-68
WO 9204577 A	19-03-92	BE 1005072 A	13-04-93
		BE 1005073 A	13-04-93
		AT 121524 T	15-05-95
		AU 8336991 A	30-03-92
		CA 2090490 A	01-03-92
		DE 69109124 D	24-05-95
		DE 69109124 T	30-11-95
		EP 0549604 A	07-07-93
		ES 2074278 T	01-09-95
		JP 6500660 T	20-01-94
US 4563726 A	07-01-86	NONE	
EP 246174 A	19-11-87	FR 2597725 A	30-10-87
US 4765510 A	23-08-88	NONE	